Amendments to the Claims:

Please amend the claims as follows:

This listing of claims replaces all prior listings and versions of claims in this application:

1. (original) A method of making an artificial lens comprising the step of

a) providing a lens from the eye of an animal;

b) evacuating the lens to retain a lens capsular bag;

c) introducing a reversible hydrogel system in solution into the capsular bag; and

d) gelling the reversible hydrogel system.

2. (original) The method of claim 1, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer is a hydrogel when in an oxidized state and is a solution when in a reduced state.

3. (original) The method of claim 2, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or a polymer derivatized to contain reversible crosslinking.

4. (original) The method of claim 3, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

5. (original) The method of claim 3, wherein the crosslinker is N, N'-bis(acryloyl)cystamine.

6. (original) The method of claim 3, wherein the crosslinker is a disulfide linker.

7. (original) The method of claim 2, wherein the oxidizing step occurs at a pH of about 6.5 to about 7.5.

8. (original) The method of claim 2, wherein the hydrogel is hydrophobic.

9. (original) The method of claim 2, wherein the hydrogel is hydrophilic.

10. (original) The method of claim 2, wherein the hydrogel is anionic.

11. (original) The method of claim 2, wherein the hydrogel is cationic.

12. (original) The method of claim 2, wherein the reduced state and the oxidized state of copolymer are reversible.

13. (original) The method of claim 2, wherein the hydrogel can be reduced to form the solution.

14. (original) The method of claim 13, wherein the hydrogel can be reduced by the addition of a reducing agent.

15. (original) The method of claim 14, wherein the reducing agent is selected from the group consisting of dithiothreitol (DTT), 2-mercaptoethanol, dithioerythritol, cystein, butanethiol, sodium borohydride, cyanoborohydride, mercaptoethylamine, ethylmaleimide, and tri(2-carboxyethyl)phosphine hydrochloride (TCEP•HCl).

16. (original) The method of claim 2, wherein the solution can be oxidized to form the hydrogel.

17. (original) The method of claim 16, wherein the solution can be oxidized by atmospheric oxygen, or light and riboflavin.

18. (original) The method of claim 1, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer forms a hydrogel when exposed to light at a first wavelength and forms a solution when when exposed to light at a second wavelength.

19. (original) The method of claim 18, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or by a polymer derivatized to contain reversible crosslinking.

20. (original) The method of claim 19, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

21. (original) The method of claim 19, wherein the reversible crosslinking contains stilbene, azo, or cinnamoyl derivatives.

22. (original) The method of claim 19, wherein the crosslinker is stilbene, azo, or cinnamoyl derivatives.

23. (currently amended) A method of forming a hydrogel *in situ* in an eye comprising the steps of

a) introducing a reversible hydrogel system in solution into the ~~capsular bag~~ eye; and

d) gelling the reversible hydrogel system.

24. (original) The method of claim 23, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer is a hydrogel when in an oxidized state and is a solution when in a reduced state.

25. (original) The method of claim 24, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or a polymer derivatized to contain reversible crosslinking.

26. (original) The method of claim 25, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol

methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

27. (original) The method of claim 25, wherein the crosslinker is N, N'-bis(acryloyl)cystamine.

28. (original) The method of claim 25, wherein the crosslinker is a disulfide linker.

29. (original) The method of claim 24, wherein the oxidizing step occurs at a pH of about 6.5 to about 7.5.

30. (original) The method of claim 24, wherein the hydrogel is hydrophobic.

31. (original) The method of claim 24, wherein the hydrogel is hydrophilic.

32. (original) The method of claim 24, wherein the hydrogel is anionic.

33. (original) The method of claim 24, wherein the hydrogel is cationic.

34. (original) The method of claim 24, wherein the reduced state and the oxidized state of copolymer are reversible.

35. (original) The method of claim 24, wherein the hydrogel can be reduced to form the solution.

36. (original) The method of claim 35, wherein the hydrogel can be reduced by the addition of a reducing agent.

37. (original) The method of claim 36, wherein the reducing agent is selected from the group consisting of dithiothreitol (DTT), 2-mercaptoethanol, dithioerythritol, cystein, butanethiol, sodium borohydride, cyanoborohydride, mercaptoethylamine, ethylmaleimide, and tri(2-carboxyethyl)phosphine hydrochloride (TCEP•HCl).

38. (original) The method of claim 24, wherein the solution can be oxidized to form the hydrogel.

39. (original) The method of claim 38, wherein the solution can be oxidized by atmospheric oxygen, or light and riboflavin.

40. (original) The method of claim 23, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer forms a hydrogel when exposed to light at a first wavelength and forms a solution when when exposed to light at a second wavelength.

41. (original) The method of claim 40, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or by a polymer derivatized to contain reversible crosslinking.

42. (original) The method of claim 41, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

43. (original) The method of claim 41, wherein the crosslinker is stilbene, azo, or cinnamoyl derivatives.

44. (original) The method of claim 23, wherein the reversible hydrogel system is used as a vitreous replacement.

45. (original) The method of claim 23, wherein the reversible hydrogel system is used as a lens replacement.

46. (original) An accomodating intraocular lens formed by *in situ* gelation of a reversibly hydrogel system.

47. (original) The intraocular lens of claim 46, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer is a hydrogel when in an oxidized state and is a solution when in a reduced state.

48. (original) The intraocular lens of claim 47, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or a polymer derivatized to contain reversible crosslinking.

49. (original) The intraocular lens of claim 48, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

50. (original) The intraocular lens of claim 48, wherein the crosslinker is N, N'-bis(acryloyl)cystamine.

51. (original) The intraocular lens of claim 48, wherein the crosslinker is a disulfide linker.

52. (original) The intraocular lens of claim 47, wherein the oxidizing step occurs at a pH of about 6.5 to about 7.5.

53. (original) The intraocular lens of claim 47, wherein the hydrogel is hydrophobic.

54. (original) The intraocular lens of claim 47, wherein the hydrogel is hydrophilic.

55. (original) The intraocular lens of claim 47, wherein the hydrogel is anionic.

56. (original) The intraocular lens of claim 47, wherein the hydrogel is cationic.

57. (original) The intraocular lens of claim 47, wherein the reduced state and the oxidized state of copolymer are reversible.

58. (original) The intraocular lens of claim 47, wherein the hydrogel can be reduced to form the solution.

59. (original) The intraocular lens of claim 58, wherein the hydrogel can be reduced by the addition of a reducing agent.

60. (original) The intraocular lens of claim 59, wherein the reducing agent is selected from the group consisting of dithiothreitol (DTT), 2-mercaptoethanol, dithioerythritol, cystein, butanethiol, sodium borohydride, cyanoborohydride, mercaptoethylamine, ethylmaleimide, and tri(2-carboxyethyl)phosphine hydrochloride (TCEP•HCl).

61. (original) The intraocular lens of claim 47, wherein the solution can be oxidized to form the hydrogel.

62. (original) The intraocular lens of claim 61, wherein the solution can be oxidized by atmospheric oxygen, or light and riboflavin.

63. (original) The intraocular lens of claim 46, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer forms a hydrogel when exposed to light at a first wavelength and forms a solution when when exposed to light at a second wavelength.

64. (original) The intraocular lens of claim 63, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or by a polymer derivatized to contain reversible crosslinking.

65. (original) The intraocular lens of claim 64, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

66. (original) The intraocular lens of claim 64, wherein the crosslinker is stilbene, azo, or cinnamoyl derivatives.

67. (original) A vitreous substitute formed by *in situ* gelation of a reversibly hydrogel system.

68. (original) The vitreous substitute of claim 67, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer is a hydrogel when in an oxidized state and is a solution when in a reduced state.

69. (original) The vitreous substitute of claim 68, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or a polymer derivatized to contain reversible crosslinking.

70. (original) The vitreous substitute of claim 69, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

71. The vitreous substitute of claim 69, wherein the crosslinker is N, N'-bis(acryloyl)cystamine.

72. (original) The vitreous substitute of claim 69, wherein the crosslinker is a disulfide linker.

73. (original) The vitreous substitute of claim 68, wherein the oxidizing step occurs at a pH of about 6.5 to about 7.5.

74. (original) The vitreous substitute of claim 68, wherein the hydrogel is hydrophobic.

75. (original) The vitreous substitute of claim 68, wherein the hydrogel is hydrophilic.

76. (original) The vitreous substitute of claim 68, wherein the hydrogel is anionic.

77. (original) The vitreous substitute of claim 68, wherein the hydrogel is cationic.

78. (original) The vitreous substitute of claim 68, wherein the reduced state and the oxidized state of copolymer are reversible.

79. (original) The vitreous substitute of claim 78, wherein the hydrogel can be reduced to form the solution.

80. (original) The vitreous substitute of claim 79, wherein the hydrogel can be reduced by the addition of a reducing agent.

81. (original) The vitreous substitute of claim 80, wherein the reducing agent is selected from the group consisting of dithiothreitol (DTT), 2-mercaptoethanol, dithioerythritol, cystein, butanethiol, sodium borohydride, cyanoborohydride, mercaptoethylamine, ethylmaleimide, and tri(2-carboxyethyl)phosphine hydrochloride (TCEP•HCl).

82. (original) The vitreous substitute of claim 78, wherein the solution can be oxidized to form the hydrogel.

83. (original) The vitreous substitute of claim 82, wherein the solution can be oxidized by atmospheric oxygen, or light and riboflavin.

84. (original) The vitreous substitute of claim 67, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer forms a hydrogel when exposed to light at a first wavelength and forms a solution when when exposed to light at a second wavelength.

85. (original) The vitreous substitute of claim 84, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or by a polymer derivatized to contain reversible crosslinking.

86. (original) The vitreous substitute of claim 85, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

87. (original) The vitreous substitute of claim 85, wherein the crosslinker is stilbene, azo, or cinnamoyl derivatives.

88. (original) A method of treating a dermatological condition comprising the step of

a) applying a reversible hydrogel system in solution on to the skin; and

b) gelling the reversible hydrogel system.

89. (original) The method of claim 88, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer is a hydrogel when in an oxidized state and is a solution when in a reduced state.

90. (original) The method of claim 89, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or a polymer derivatized to contain reversible crosslinking.

91. (original) The method of claim 90, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

92. (original) The method of claim 90, wherein the crosslinker is N, N'-bis(acryloyl)cystamine.

93. (original) The method of claim 90, wherein the crosslinker is a disulfide linker.

94. (original) The method of claim 89, wherein the oxidizing step occurs at a pH of about 6.5 to about 7.5.

95. (original) The method of claim 89, wherein the hydrogel is hydrophobic.

96. (original) The method of claim 89, wherein the hydrogel is hydrophilic.

97. (original) The method of claim 89, wherein the hydrogel is anionic.

98. (original) The method of claim 89, wherein the hydrogel is cationic.

99. (original) The method of claim 89, wherein the reduced state and the oxidized state of copolymer are reversible.

100. (original) The method of claim 99, wherein the hydrogel can be reduced to form the solution.

101. (original) The method of claim 100, wherein the hydrogel can be reduced by the addition of a reducing agent.

102. (original) The method of claim 101, wherein the reducing agent is selected from the group consisting of dithiothreitol (DTT), 2-mercaptoethanol, dithioerythritol, cystein, butanethiol, sodium borohydride, cyanoborohydride, mercaptoethylamine, ethylmaleimide, and tri(2-carboxyethyl)phosphine hydrochloride (TCEP•HCl).

103. (original) The method of claim 99, wherein the solution can be oxidized to form the hydrogel.

104. (original) The method of claim 103, wherein the solution can be oxidized by atmospheric oxygen, or light and riboflavin.

105. (original) The method of claim 88, wherein the reversible hydrogel system comprising a copolymer, wherein said copolymer forms a hydrogel when exposed to light at a first wavelength and forms a solution when when exposed to light at a second wavelength.

106. (original) The method of claim 105, wherein the copolymer is produced by polymerization of a monomer with a crosslinker or by a polymer derivatized to contain reversible crosslinking.

107. (original) The method of claim 106, wherein the monomer is selected from the group consisting of acrylamide, N-ornithine acrylamide, N-(2-hydroxypropyl)acrylamide, hydroxy-ethylacrylate, hydroxyethylmethacrylate, polyethyleneglycol acrylates, polyethyleneglycol methacrylates, N-vinyl pyrolidone, N-phenylacrylamide, dimethylaminopropyl methacrylamide, acrylic acid, benzylmethacrylamide, and methylthioethylacrylamide.

108. (original) The method of claim 106, wherein the crosslinker is stilbene, azo, or cinnamoyl derivatives.

109. (original) The method of claim 88, wherein the reversible hydrogel system comprises a drug or particles.

110. (original) The method of claim 109, wherein the drug is at least one antibiotic.

111. (original) The method of claim 88, wherein the dermatological condition is selected from the group consisting of a burn, a wound, an insect bite, dry skin, and psoriasis.

112. (original) The method of claim 1, wherein the reversible hydrogel system comprises a drug or particles.

113. (original) The method of claim 112, wherein the particles are proteins, polymers, or inorganic compounds.

114. (original) The method of claim 112, wherein the particles are nanoparticles.

115. (original) The method of claim 114, wherein the nanoparticles have sizes from about 4 nm to about 100 nm.

116. (original) The method of claim 114, wherein the nanoparticles do not scatter visible light.

117. (original) The method of claim 23, wherein the reversible hydrogel system comprises a drug or particles.

118. (original) The method of claim 117, wherein the particles are proteins, polymers, or inorganic compounds.

119. (original) The method of claim 117, wherein the particles are nanoparticles.

120. (original) The method of claim 119, wherein the nanoparticles have sizes from about 4 nm to about 100 nm.

121. (original) The method of claim 119, wherein the nanoparticles do not scatter visible light.